

# Case report: subcutaneous *Exophiala xenobiotica* infection successfully treated with a combined medical and surgical approach

## Abstract

*Exophiala xenobiotica* is a black yeast from the *Exophiala* genus. Literature suggests it has consistently been underdiagnosed in recent years, because of poor microbiological identification techniques and the discovery of multiple new species within the genus. *Exophiala xenobiotica* most commonly causes subcutaneous infections. It often thrives in damp places, and places where there are aromatic compounds. This report describes a multi-comorbid patient including previous basal cell carcinoma and prostate cancer who developed this infection. An 88-year-old caucasian man presented to the orthopaedic clinic with a lump on the dorsum of his right wrist, he was given a provisional diagnosis of a ganglion cyst. The lesion had been there for two years and had steadily increased in size. The patient had no pain or systemic symptoms and was not prescribed any immunosuppressive medication. After the yeast was isolated, he was prescribed an eight-week course of itraconazole, with surgical excision of the lesion two weeks into the course. The procedure was a success, and the lesion showed no signs of recurrence at the six-week follow up. This case report adds to the literature supporting a combined surgical and medical approach for the treatment of subcutaneous *Exophiala xenobiotica* infections.

**Keywords:** *Exophiala xenobiotica*, treatment, combined approach

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## Case presentation

An 88-year-old gentleman was referred to the local orthopaedic team after complaining of a cystic growth the right dorsum of his wrist progressing over two years. He reported that before the lump presented, he had scratched his wrist whilst gardening. The patient reported no systemic symptoms.

## Past medical history

His past medical history included hypertension, polymyalgia rheumatica, a malignant melanoma of his lower leg, a facial basal cell carcinoma, cerebellar haemorrhage, and carcinoma of the prostate and gallstones. He was not prescribed any immunosuppressant medications. He denied any alcohol intake and did not smoke.

## Patient examination

On examination there was a cystic mass (44mm\*33mm\*25mm) on the dorsum of the patient right wrist. It was fluctuant and swollen with no overlying erythema. The lump moved with the underlying tissues on finger extension. The patient had no constitutional symptoms of infection and local lymph nodes were not palpable.

## Differential diagnoses

The key differential diagnoses for the wrist lesion included a sebaceous cyst, a ganglion cyst, lipoma, neoplasm or vascular malformation.

## Management plan

An aspirate of the ganglion was sent for culture and sensitivity. Because of the patient's comorbidities it was initially thought that

he would not be suitable for a general anaesthetic and conservative management was planned.

## Microbiology

Local laboratory results: 5mls of frank pus, with +++ white cells and +++ yeast. The yeast was submitted to the PHE Mycology Reference Laboratory in Bristol for identification and susceptibility testing.

The following report came back:

*Exophiala xenobiotica*

Amphotericin B: MIC = 0.5 mg/l sensitive

Itraconazole: MIC = 0.25 mg/l

Voriconazole MIC = 4 mg/l intermediate

\*MIC= minimum inhibitory concentration<sup>1</sup>

## Further management

Following these results, the patient was prescribed 200 mg of itraconazole once a day for two weeks preceding an excisional biopsy of the lesion. The patient was then to have an excisional biopsy of the lesion. The patient then completed a further six weeks of itraconazole post operatively.

## Further results

Repeat pus sample collected during the excision demonstrated a black fungal organism with budding yeast hyphae. Histological analysis of the lesion reported a nodule of pale fibrous tissue measuring 44\*35\*25mm, on sectioning this is a unilocular cyst

with wall measuring up to 4mm in thickness and the internal surface appears inflamed and ulcerated.

## Discussion

*Exophiala Xenobiotica* is a black yeast from the genus *Exophiala*, that often grows in environments which are moist, hot with an abundance of toxic hydrocarbons.<sup>2</sup> *Exophiala xenobiotica* comes from the *Exophiala* genus which has 16 different species identified within it.<sup>3</sup> The yeast is predominantly responsible for causing subcutaneous infections in humans<sup>2,4</sup> but has also been shown to infect other sites including blood, dialysis fluid, intra-ocular tissues and mucous membranes.<sup>2</sup> It has also been found to cause systemic infections fish.<sup>5</sup> Although it commonly causes skin infections in humans, it is rarely responsible for systemic infections, like the other members of its genus.<sup>6</sup>

Two published case reports demonstrate infections in an HIV infected patient,<sup>2</sup> and a patient with non-Hodgkin's lymphoma,<sup>6</sup> however literature suggests it is more commonly associated with healthy individuals and innately immunocompromised patients, rather than those with acquired immunodeficiencies.<sup>2</sup>

In a study by Zeng and colleagues in 2009,<sup>3</sup> where over 188 samples of *Exophiala* infections were analysed, *Exophiala xenobiotica* was responsible for 20% of infections in this study population. Although the patient in question did not currently have any immunosuppressive therapy prescribed at the time of infection, his multi-comorbid status will have weakened his immune system, which may have made him more susceptible to develop this infection.

Current literature suggests that Amphotericin B, voriconazole, itraconazole, posaconazole is effective treatments for *Exophiala xenobiotica* infection (ibid), with the azole antifungals being the most effective (ibid). In addition to this a combined medical and surgical approach is recommended for complete eradication of the yeast.<sup>3,6</sup>

## Conclusion

Aspiration of the cyst showed that the fungus *Exophiala xenobiotica* was responsible for the current presentation. An eight-week course of Itraconazole pre and post operatively was given to the patient. When the patient was followed up in the orthopaedic clinic

his wound had healed nicely and there was no further recurrence of swelling or infection. The patient however died 6 months after his procedure likely due to an unrelated intrabdominal infection and progressive metastatic prostate cancer. This case report adds to the literature supporting a combined surgical and medical approach towards the treatment of *Exophiala xenobiotica* cutaneous infections.

## Scope for further research

As Morio and colleagues in 2012<sup>2</sup> conclude, there is no consensus on what the treatment for *Exophiala Xenobiotica* infections should be. This can be supported by further case reports, building up the evidence base to analyse treatment strategies for this infection including cases where longer term follow up is possible.

## Acknowledgments

None.

## Conflicts of interest

Authors declare that there is no conflict of interest.

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